Chapter 13: Managing Soil Survey Data

Chapter 3 introduced the concept of database objects and explained the creation of the new "Mapunit" object. Chapter 7 introduced the objects and tables associated with the aggregated map unit data (Area, Legend, Mapunit and Data Mapunit). Chapter 13 will introduce the database correlation concepts of managing the map units.

There are 3 typical correlation events that affect map unit management.

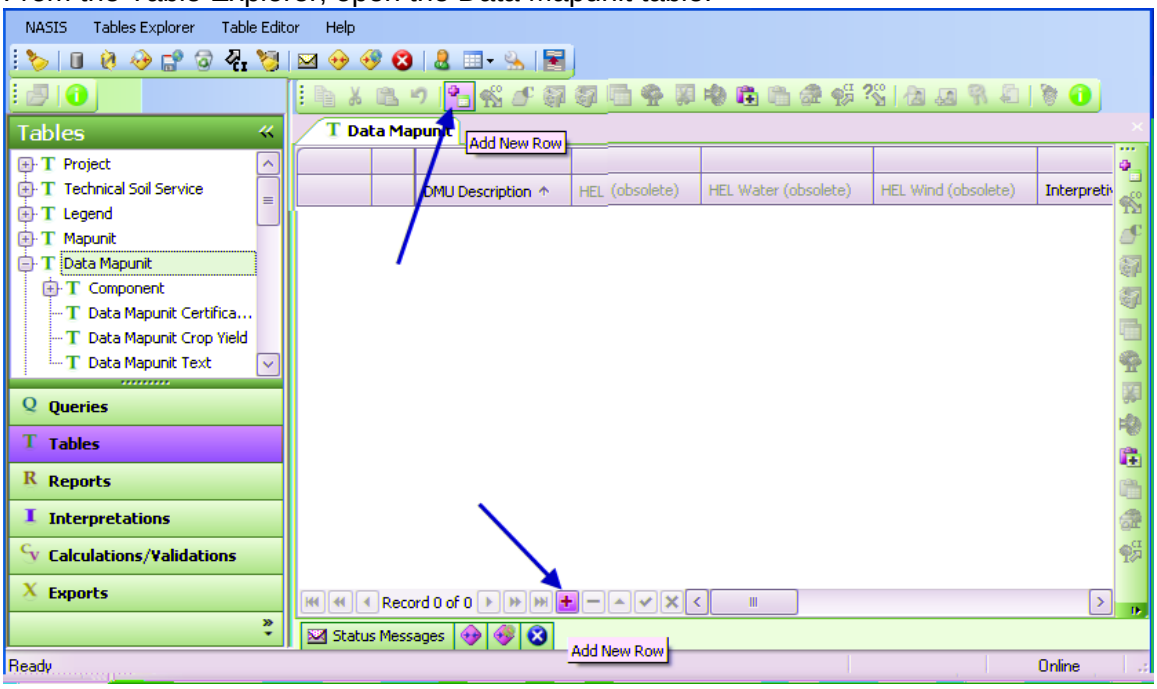
1. creating a new map unit (page 13.1)
2. combining existing map units (page 13.8)
3. splitting an existing map unit into two or more map units (page 13.16)
4. analyzing multiple same named map units into an MLRA concept (Chapter 14)

Creating a New Map Unit

The creation of a new map unit begins with identifying the "map unit concept"; taking the idea and translating it into the database. This process begins in the Data Mapunit object. It is in the Data Mapunit object that the map unit concept is created and once created, then linked to a Mapunit, then subsequently to a Legend.

Step 1 – Create a new Data Mapunit

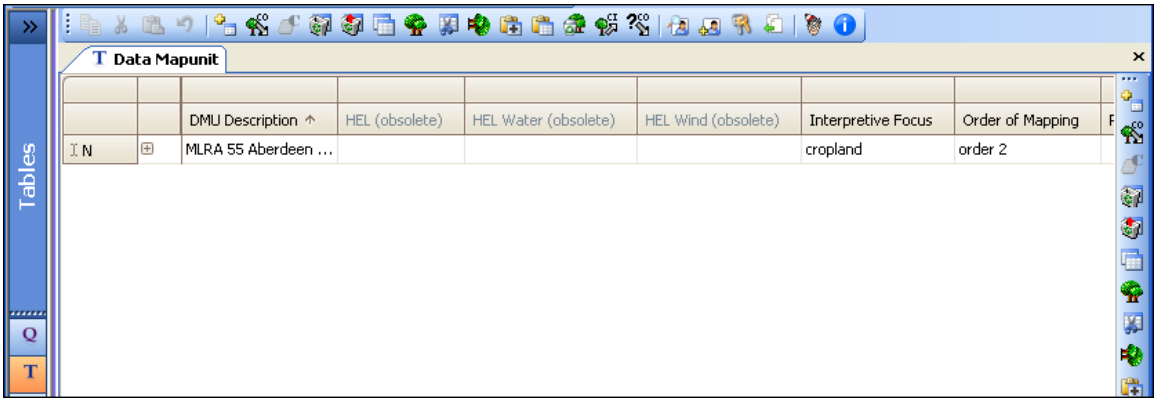
From the Table Explorer, open the Data Mapunit table.



Toolbar icons are available to add a new row or the Table Editor Menu can be used.

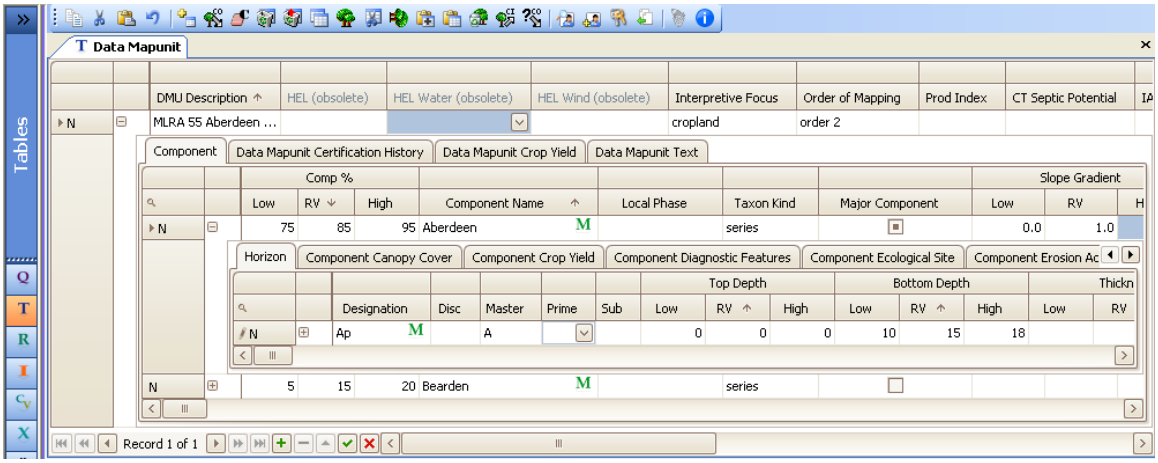
Step 2 – Populate the Data mapunit

The majority of the time, a Data Mapunit will be populated by copying an existing Data Mapunit or by copying an existing component and pasting that record into the new Data Mapunit. For this example, The Aberdeen series will be developed into a new map unit.



n.]TEMCID 5 BDC xisti

Step 4 – Open and populate the Component child tables



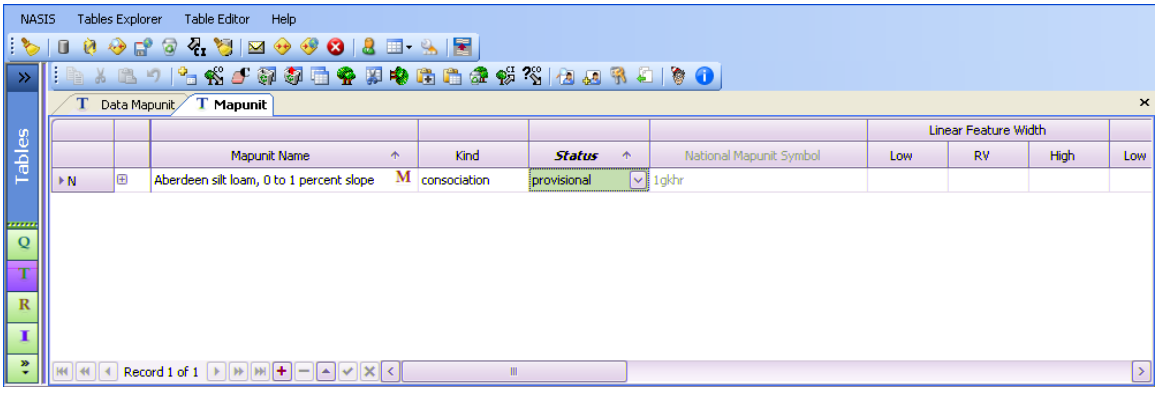
Once again, click on the plus sign to the left of the Component table to open its child tables. Insert new row(s) into the Horizon table and begin populating the Horizon level data. Completely populate all Component child tables and Horizon child tables.

Population Rules:

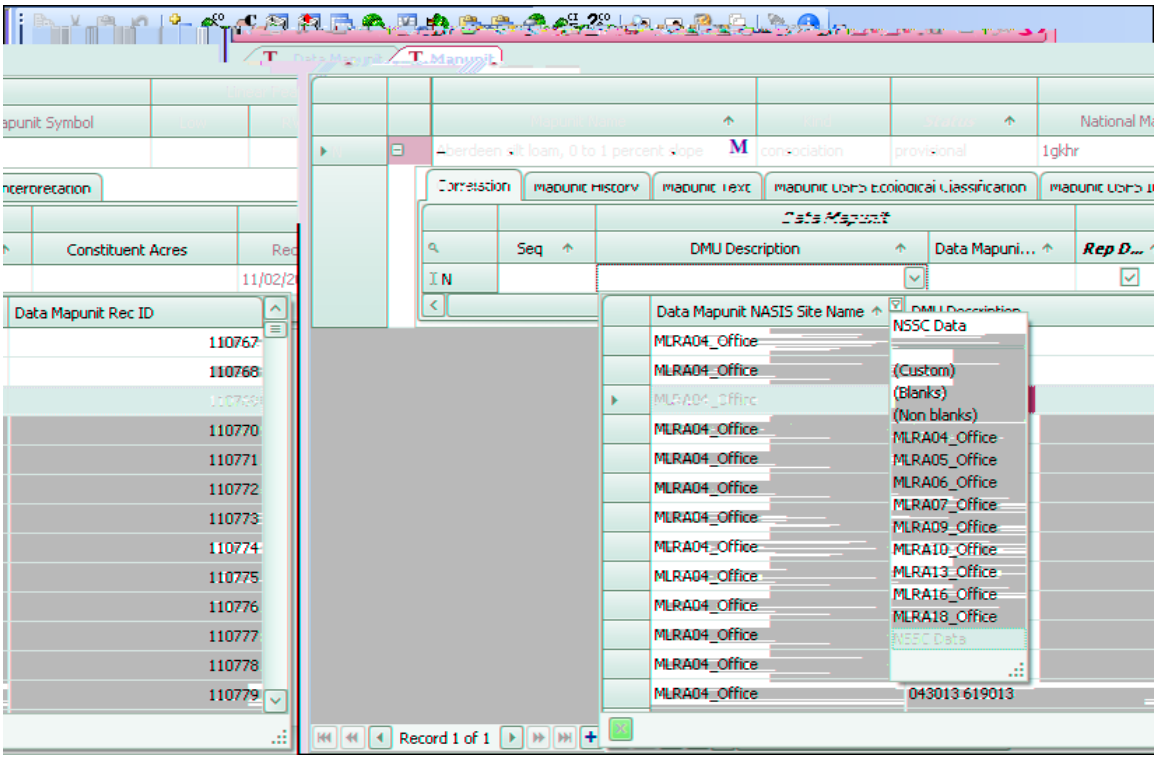
- Minimize the use of calculations by examining existing laboratory or field determined data
- Populate all fields

Step 5 – Create the Mapunit

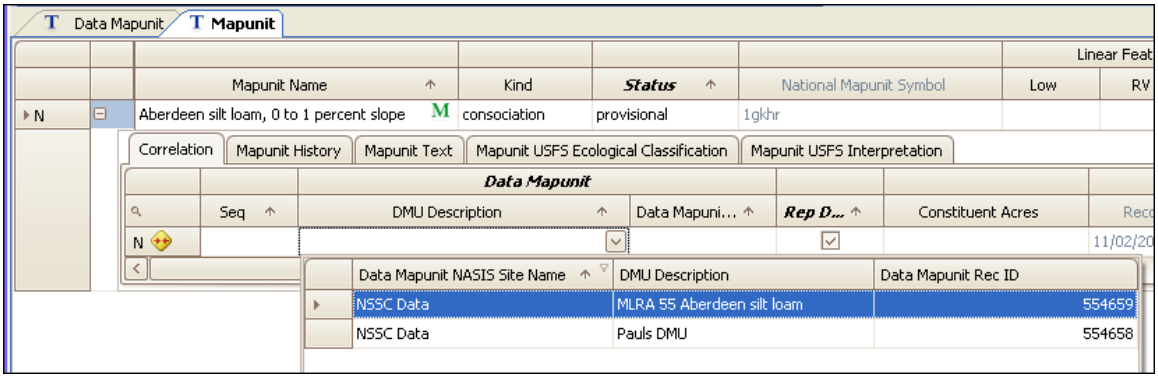
Open the Explorer panel and navigate to the Mapunit table. Insert a new row and begin populating the mapunit fields. Notice the map unit is listed as a provisional map unit. Once the edit is ended the National Map unit Symbol is assigned. This value is assigned by converting the record ID number to a Base31 alphanumeric character.



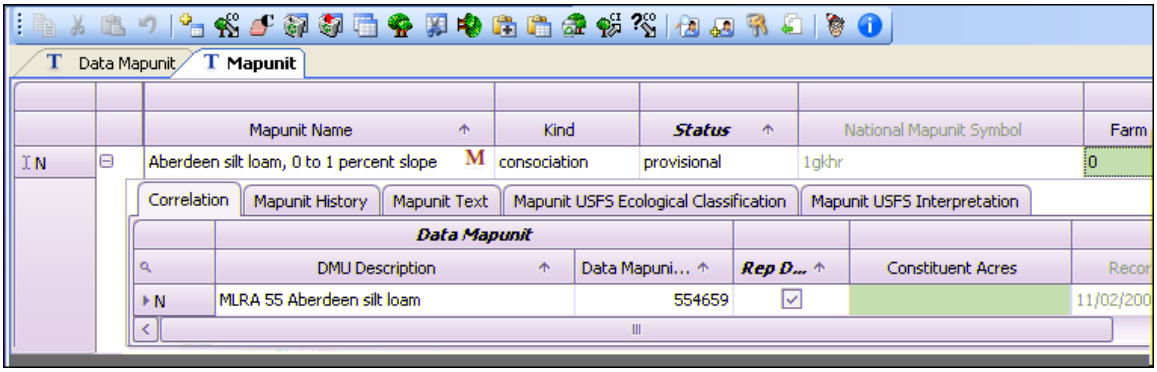
Step 6 – Link the Mapunit and Datamapunit



Open the Mapunit child tables by clicking on the plus sign to the left of the table. Insert a new row into the Correlation table. Use the choice list in the DMU Description field. All choices lists are temporary tables and can be sorted or filtered. In this instance, the new Data mapunit is owned by the NSSC Data site; by filtering on this site the DMU can be easily identified:

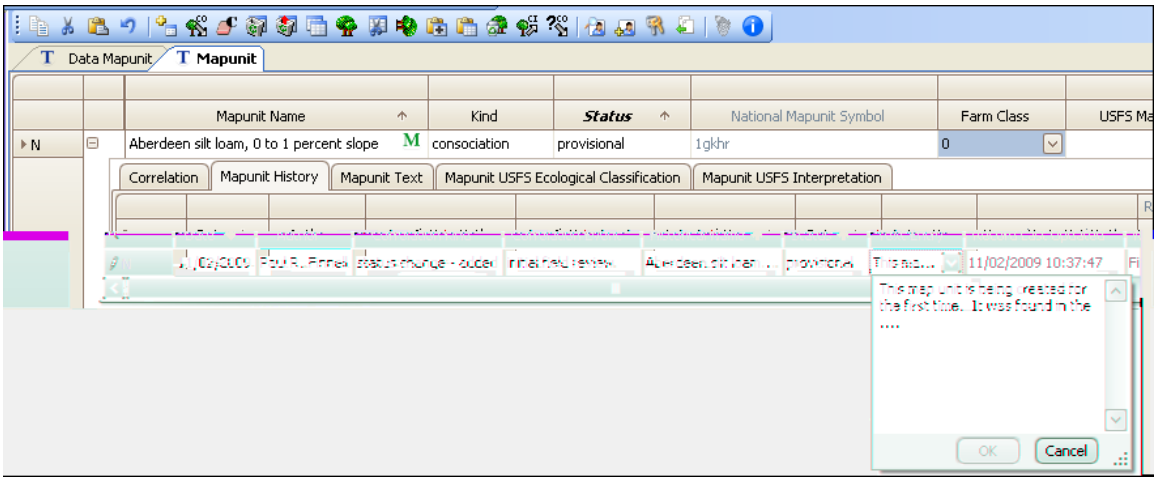


The DMU is now linked to its map unit.



Step 7 – Document the Mapunit

The map unit **must be documented** at each correlation event. The creation of the map unit initiates the first documentation of the map unit. Open the Mapunit History table and populate the first record.



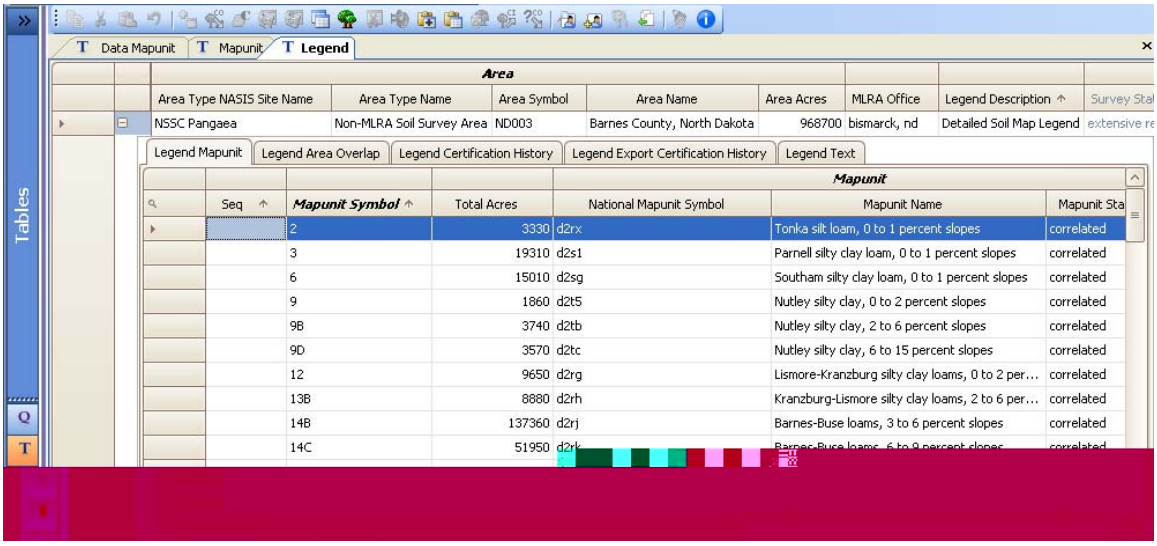
The map unit is to be documented in the Mapunit History table at all subsequent correlation events.

Step 8 – Linking the Mapunit to the Legend

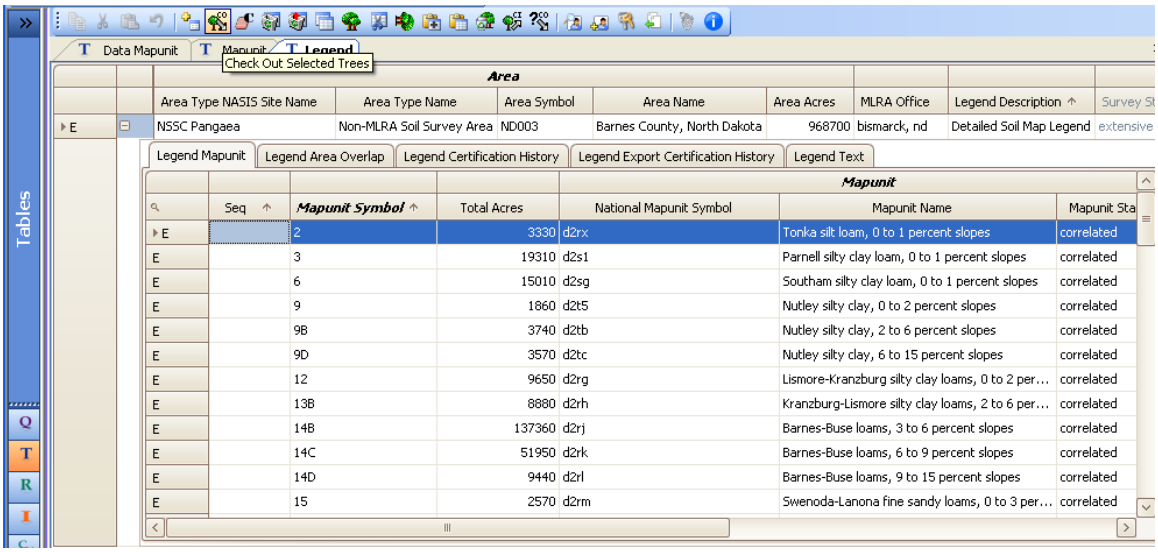
Notice that the map unit status is assigned in the Mapunit table. As a new map unit, this status is “provisional”.

To link this new map unit to a legend, load the legend into the Editor panel and verify the legend is “checked out” in order to edit the legend.

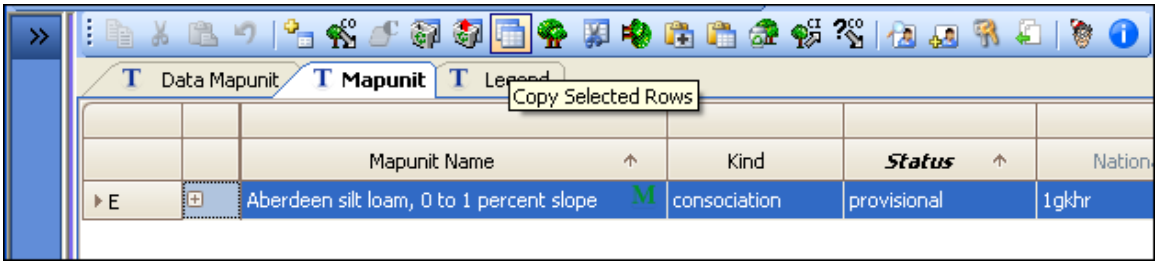
Open the Legend child tables and view the Legend Mapunit table.



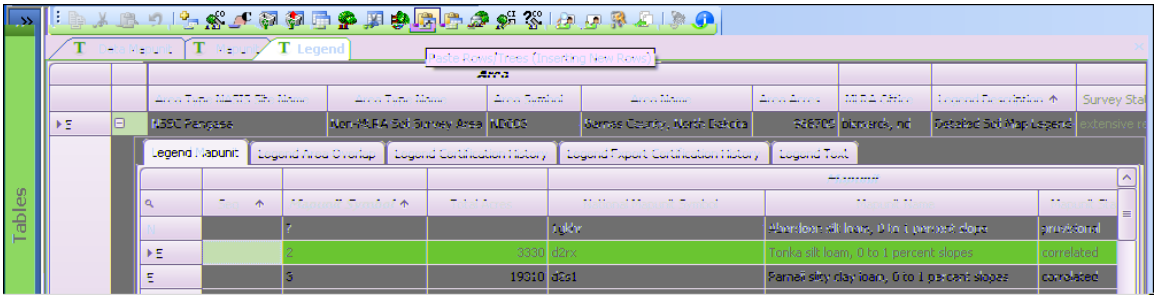
This legend must be “checked out”.



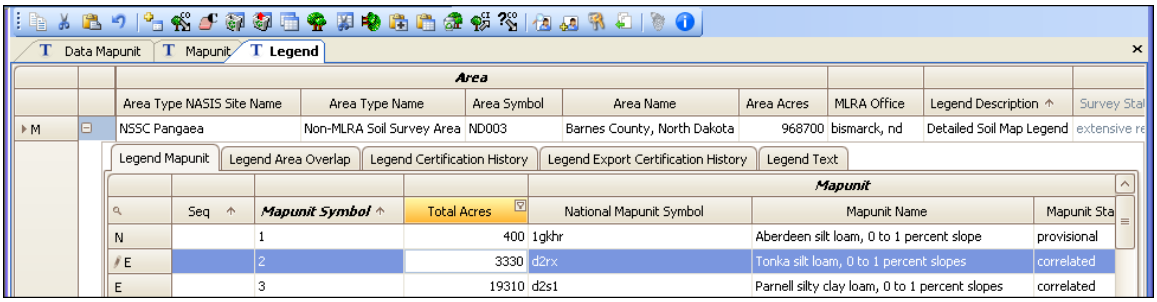
Return to the map unit table and copy the new mapunit:



Return to the Legend Mapunit table and paste in the new map unit:



Notice the two fields to be populated are the Mapunit Symbol and the Total Acres.



The data is then saved to the national server and the legend is “Checked In”.

At the time of “Correlation”, rows will be inserted into the Data Mapunit Certification History table and the Legend Certification History table:

- The Soil Survey Leader will certify the “Quality Control” has been completed.
- And, the MLRA Office will add a second row of data and certify the “Quality Assurance” has been completed.

After Certification, the Mapunit Status is changed to “correlated” and the State Soil Scientist is informed that the data has passed QC and QA and is ready to submit to the Staging Server for release to the Soil Data Mart.

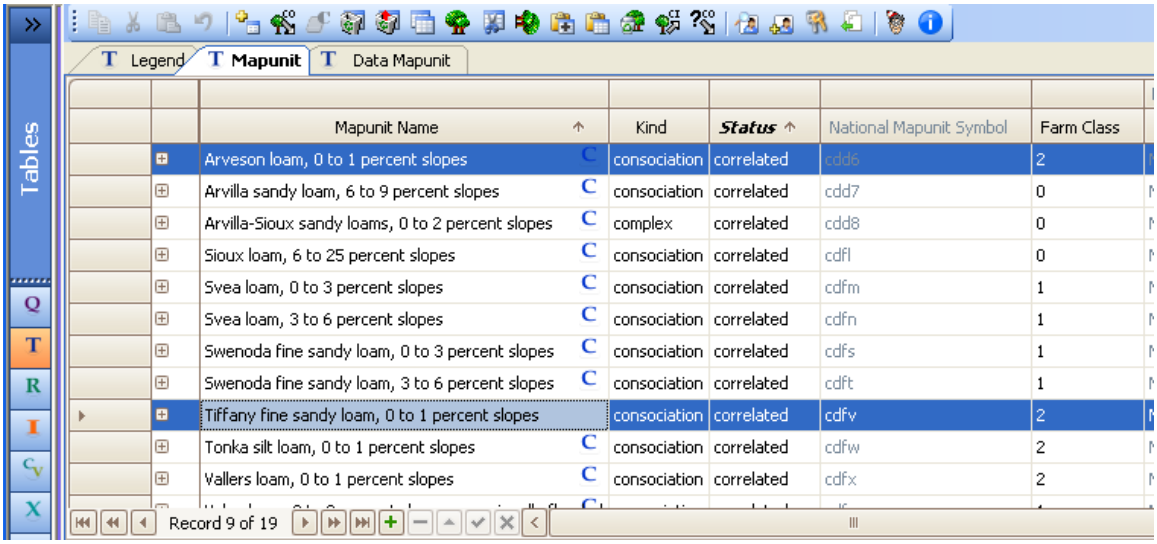
This completes the scenario of creating a new map unit.

Combining Existing Mapunits

This scenario can encompass the:

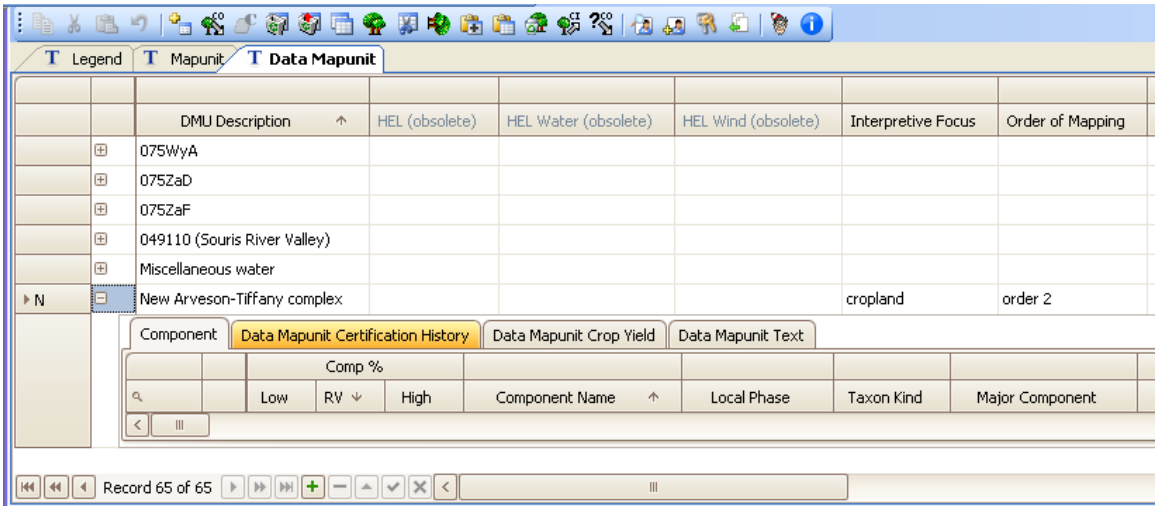
- combining of two consociations into a complex, or
- combining two similar map units by mapping “out” a closely similar map unit if favor of a dominant map unit, or
- combining similar named map units in various survey legends and replacing with a single map unit for all legends.

Regardless of the scenario, the steps will remain the same. This scenario will combine two existing consociations into a new complex.



Note the Arveson and the Tiffany consociations. It is determined that these two map units will be combined into a new complex. The data is already loaded into the selected set.

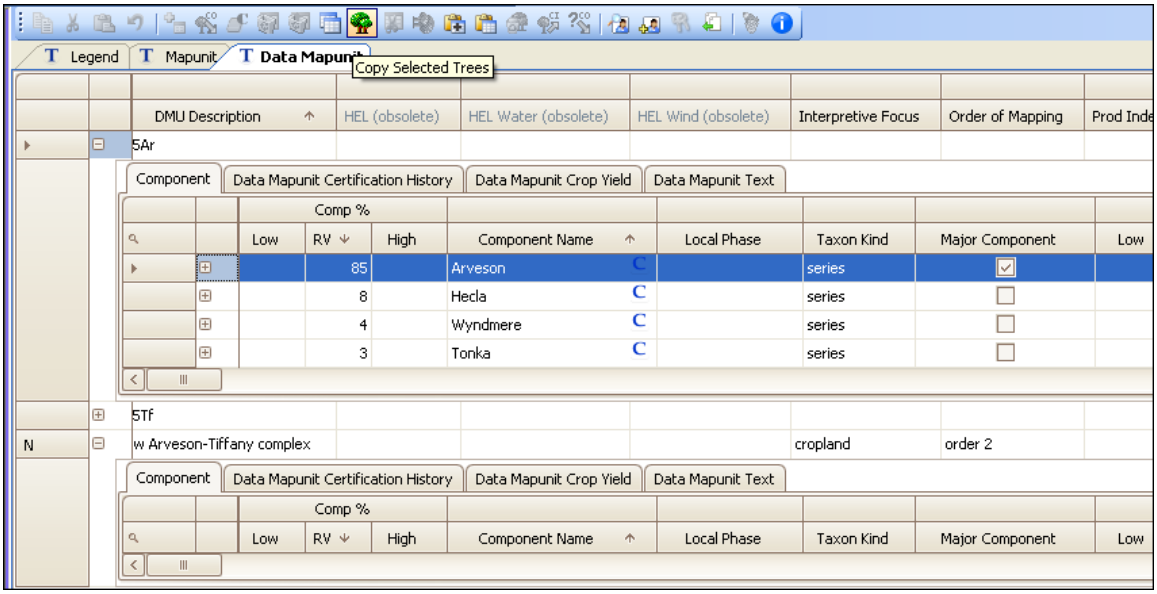
Step 1 – Create a new Data Mapunit



A new record is created in the Data Mapunit table and data is populated.

Step 2 – Copy existing components into New Data Mapunit

Moving to the Arvena Data Mapunit, the Component table is opened and the “Tree” (Parent and child tables) is copied and then pasted into the new Data Mapunit.

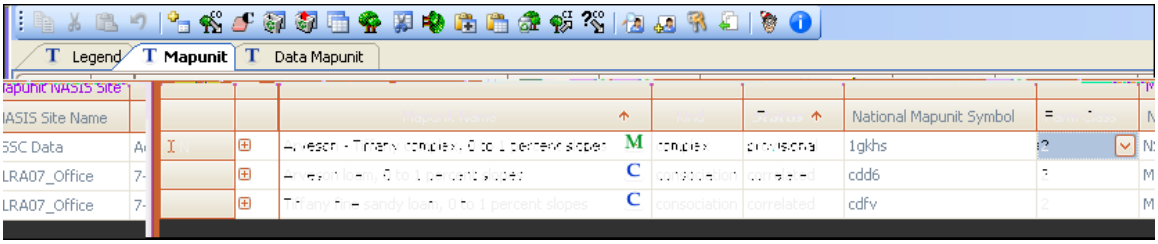


After pasting in the Arveson, the Tiffany Data Mapunit is opened and the Tiffany is copied and pasted into the new Data mapunit:

The result is a new Data Mapunit for the Arveson-Tiffany complex. The component percentages will be adjusted to reflect the new complex. In addition all component fields will be reviewed to match the new map unit concept.

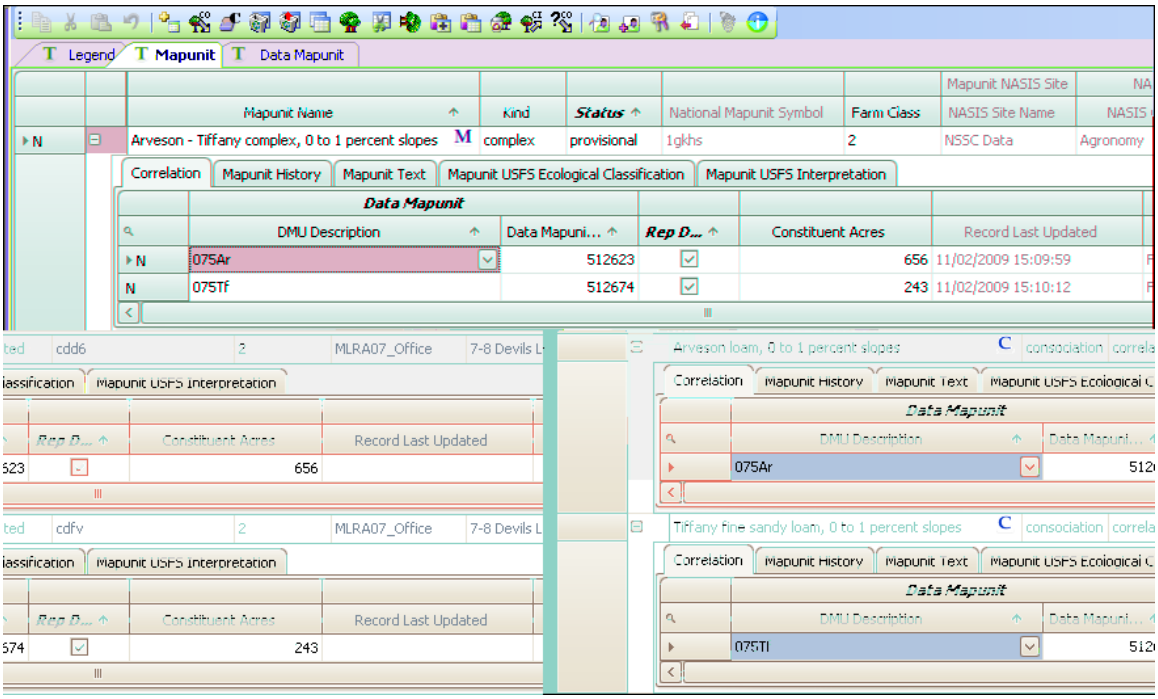
Step 3 – Create a New Mapunit

Returning to the Mapunit table, a new row is inserted and the Mapunit table is populated:



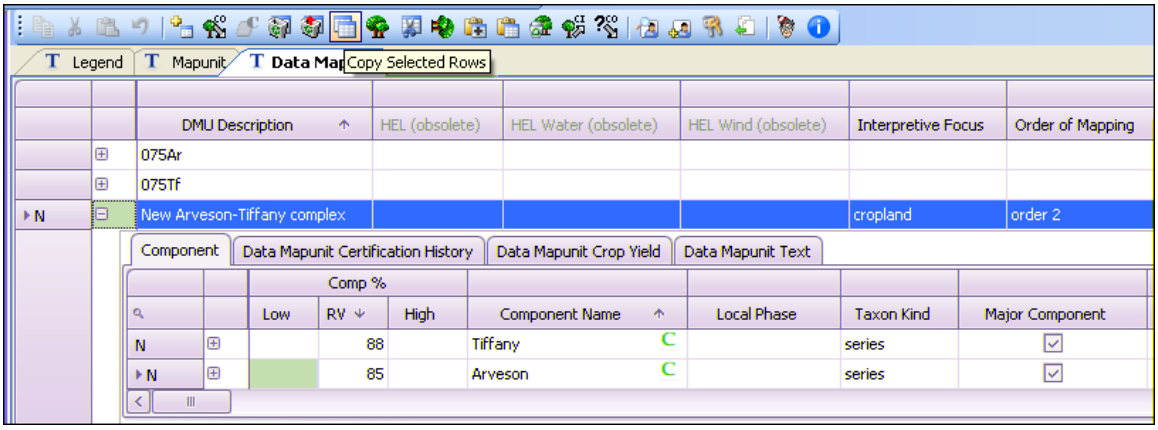
Step 4 – Link the Old Mapunits to the New Mapunit

The map units must be linked together in order to build a conversion legend – a legend used to identify what map unit was replaced with new symbols. To complete this step, the correlation records from the old map units are copied and pasted into the new map unit.

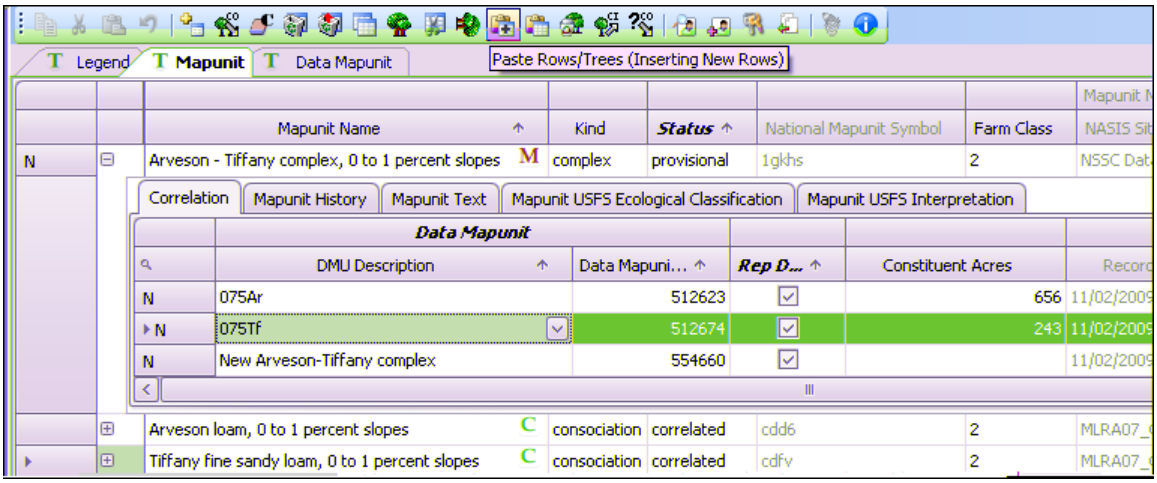


Step 5 – Link the New Data Mapunit to the New Mapunit

Return to the Data Mapunit table and copy the row of data from the new Data Mapunit. Then paste this into the Correlation table for the new Mapunit.



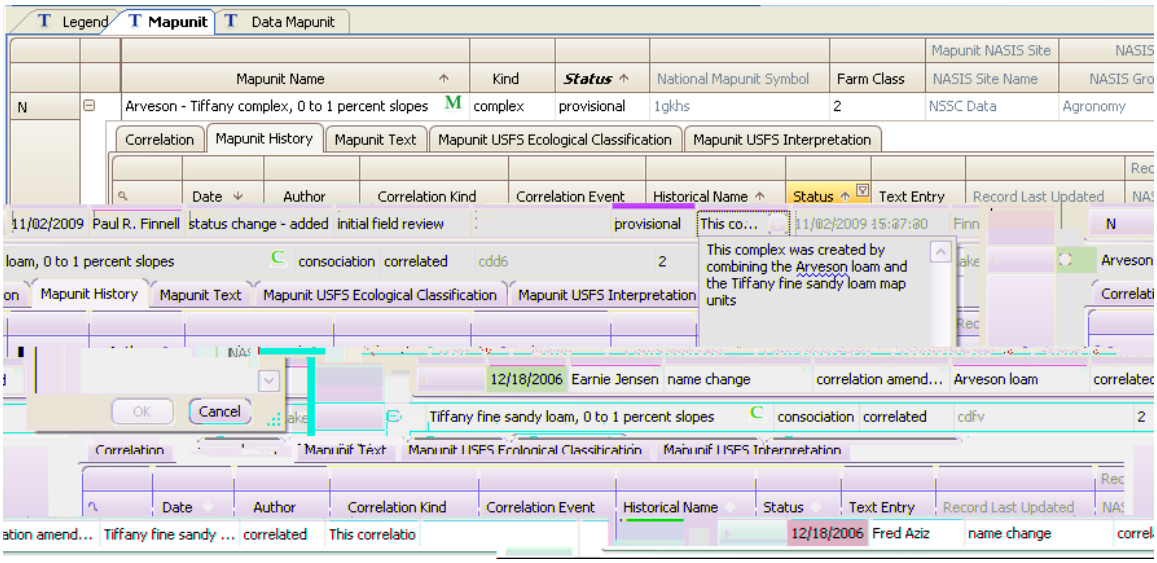
Then pasting the record into the Correlation table,



The Correlation table for the new map unit now contains the correlation records from the two map units that it will eventually replace in addition to the new Data Mapunit created for the complex. The “constituent acres” identifies the acres that each former map unit contributed to the new map unit.

Step 6 – Document the Mapunit

All of the mapunits are documented to identify the changes.



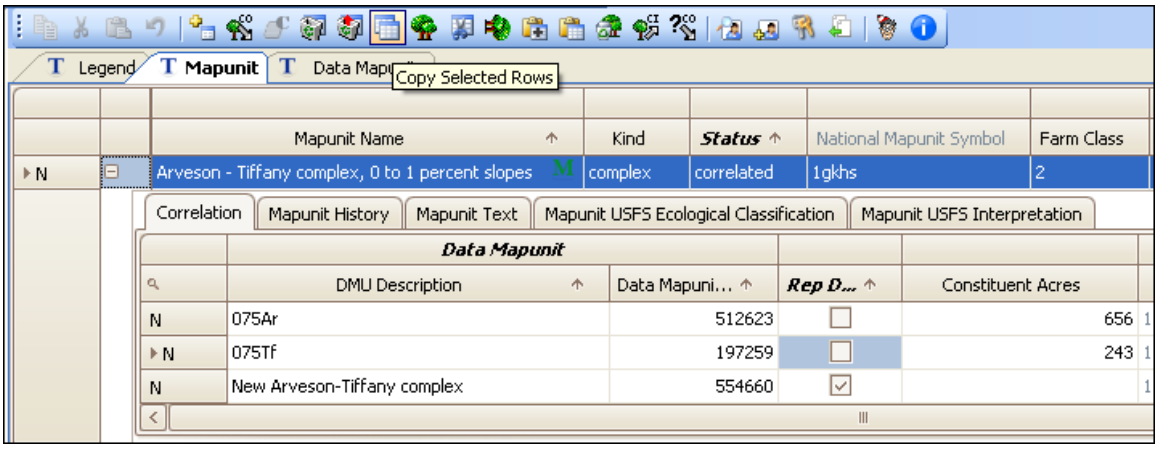
When complete, each map unit will have a record in the Mapunit History table. The new map unit will document the map units that were combined to create the complex. The old map units will document why the map unit was combined and to what map unit it was combined into.

Remember that NASIS is a read only database and the existing map units must be “Checked Out” in order to insert a new record in the Mapunit History table.

Step 7 – Link the new Mapunit to the Legend

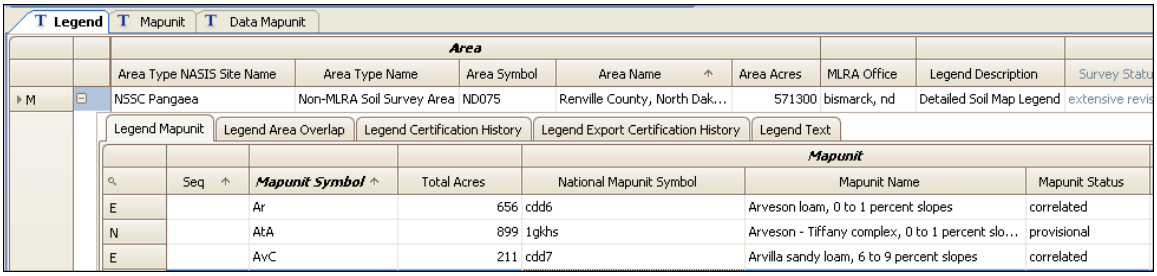
Set the new Data Mapunit to be the Representative DMU and “uncheck” the old DMU correlation records. A map unit can only have one representative DMU.

In the Mapunit table, highlight and copy the New Map unit row of data:



Then navigate to the Legend table, verify the Legend has been “Checked Out” and is in an Edit mode (Note the “E” status). Then paste the new map unit record into the Legend Mapunit table:

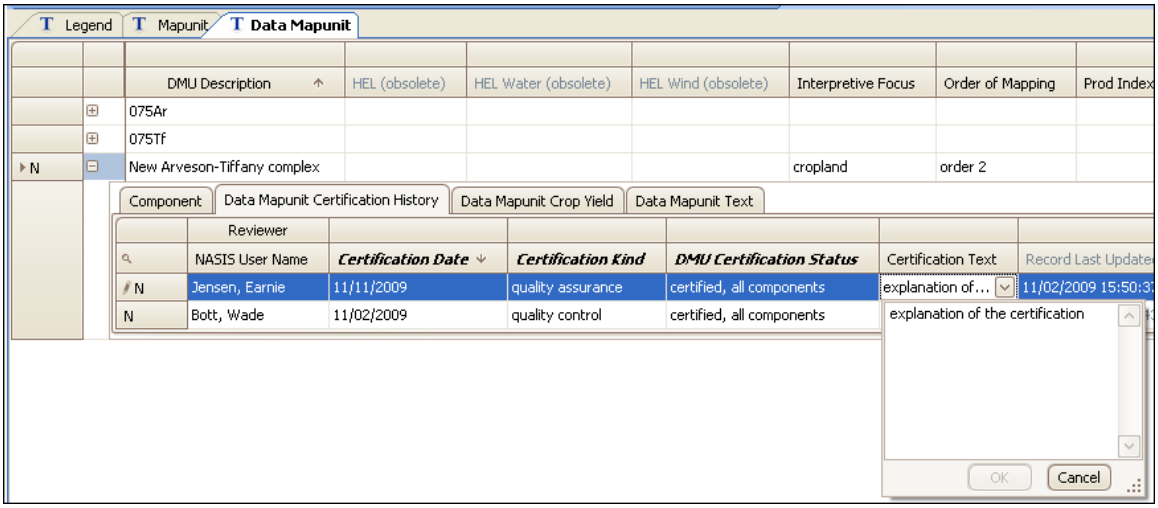
The new map unit symbol and new map unit acres are then populated.



Notice that the map unit is “provisional”. Through correlation events the map unit will progress from “provisional” to “approved” to “correlated” status. The status is changed after the Quality Control and Quality Assurance has been certified.

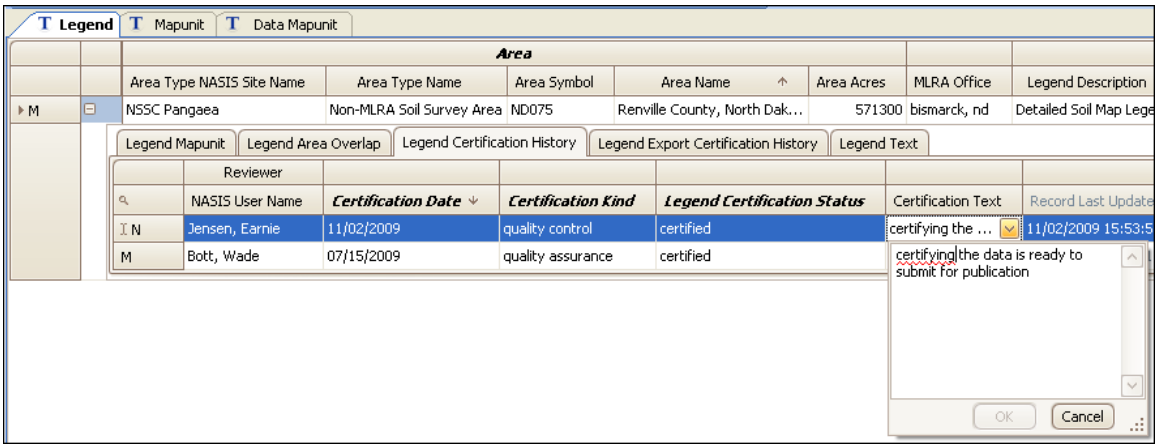
Step 8 – Certification

Before the new map unit is changed to a status of “correlated” and before released to the State Soil Scientist for publication, the data must be certified. Return to the Data Mapunit object and open the “Data Mapunit Certification History” child table:



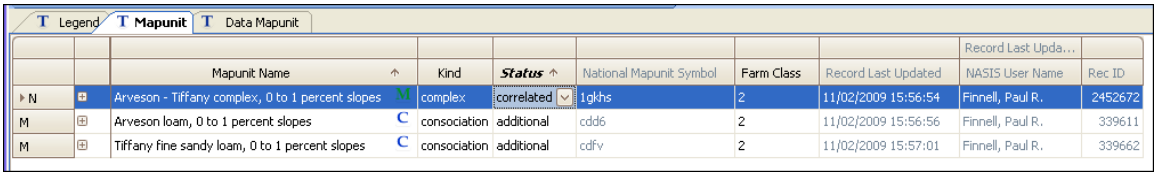
The Soil Survey Leader and the Soil Data Quality Specialist are required to certify the Data Mapunit.

Then, return to the Legend Object and open the Legend Certification History table and repeat the process:



Step 9 – Modify the Mapunit Status

Return to the Mapunit Object and modify the mapunit status to reflect the correlation – the new map unit is now “Correlated” and the old map units are set to “Additional”:



Legend | Mapunit | Data Mapunit

		Mapunit Name		Kind	Status	National Mapunit Symbol	Farm Class	Record Last Updated	Record Last Upda... NASIS User Name	Rec ID
N	⊞	Arveson - Tiffany complex, 0 to 1 percent slopes	M	complex	correlated	1gkhs	2	11/02/2009 15:56:54	Finnell, Paul R.	2452672
M	⊞	Arveson loam, 0 to 1 percent slopes	C	consociation	additional	cdd6	2	11/02/2009 15:56:56	Finnell, Paul R.	339611
M	⊞	Tiffany fine sandy loam, 0 to 1 percent slopes	C	consociation	additional	cdfv	2	11/02/2009 15:57:01	Finnell, Paul R.	339662

Notice the “Record Last Updated” and “NASIS User Name” fields. These fields are populated each time the record is modified. Each record in the database now records the last person to edit and the data and time of the edit.

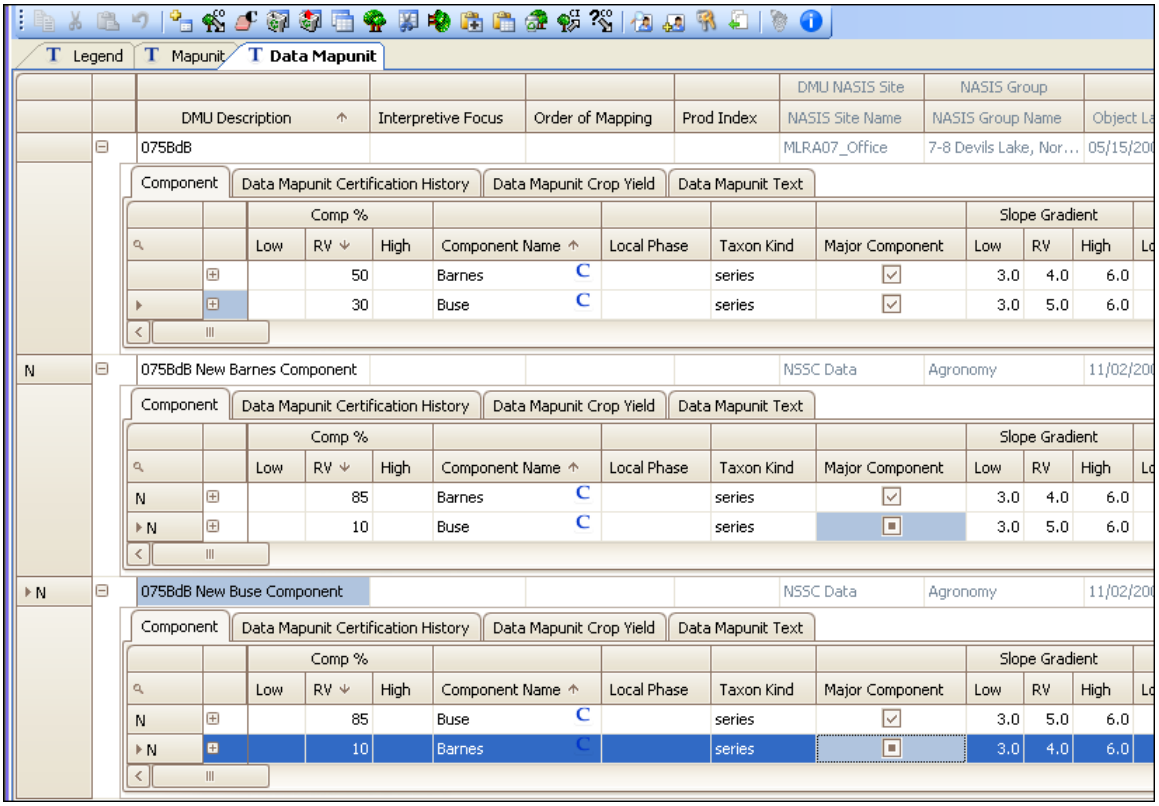
The “Combining Existing Mapunits” scenario is completed.

Splitting Map Units

This scenario is a reverse of the previous scenario. The steps in splitting a mapunit are to

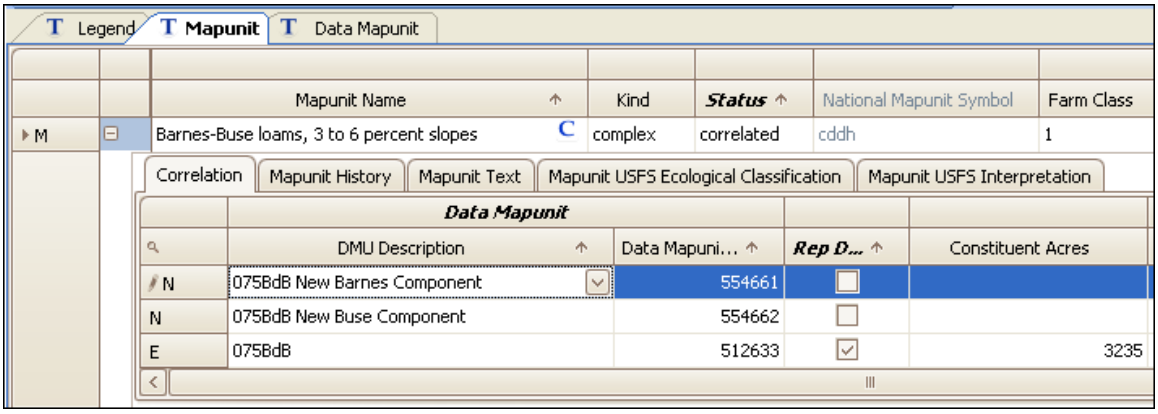
Step 1 – Create new Data Mapunits

Create new Data Mapunits and edit to reflect the new map unit concepts. This can be accomplished by copying the original DMU and pasting it to create copies. Then each copy is modified to reflect the new map unit concept of the split.



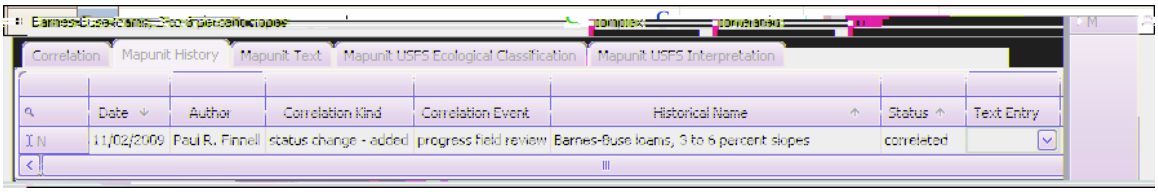
Step 2 – Populate the Correlation Table

Return to the Mapunit table.
Check out the original map unit.
Enter the new Data Mapunits into the Correlation table of the original Mapunit and set the new Rep DMU to unchecked.



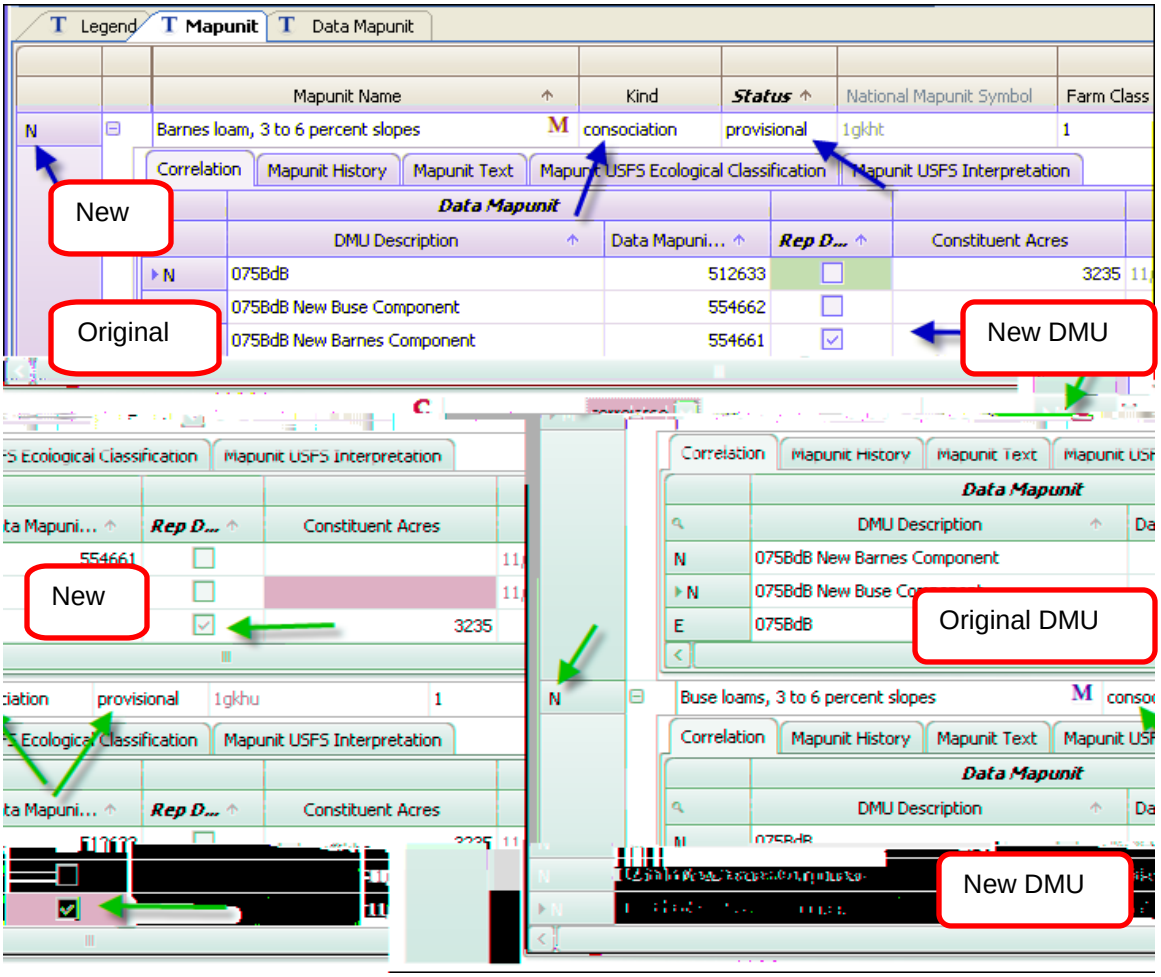
Step 3 – Document the Mapunit

Move to the Mapunit History table and document the map unit. By doing so now, before copying and pasting the map unit, the new map units will retain the original documentation.



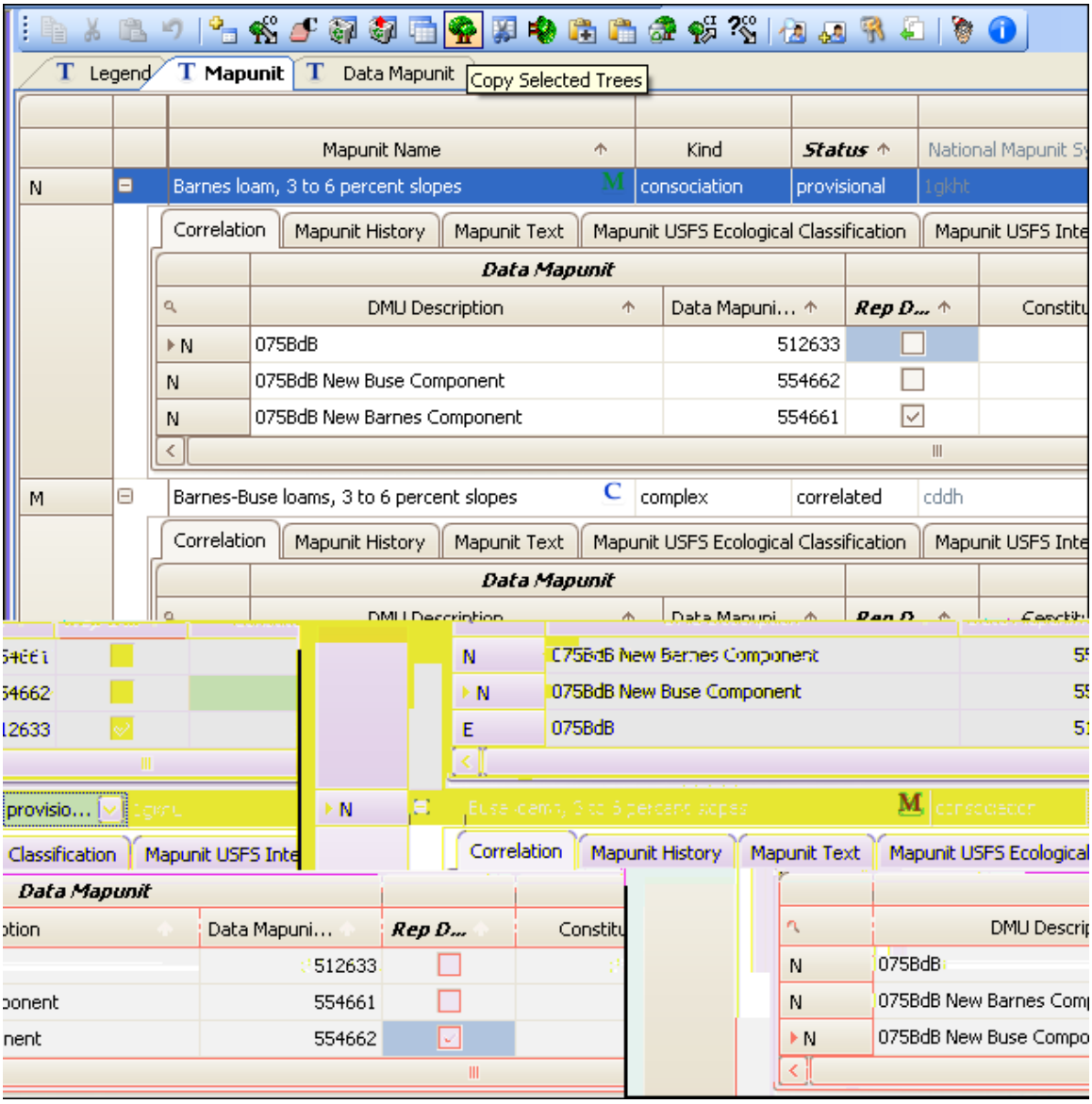
Step 4 - Create the new Mapunits

This is best done by copying the original map unit and pasting it twice to represent the split. By copying the original map unit, the correlation records are retained. Since the Correlation table now contains the new DMU records the original mapunit will be linked to the new mapunits. Change the Mapunit Name and set the mapunit Status to “provisional” on the new map units.



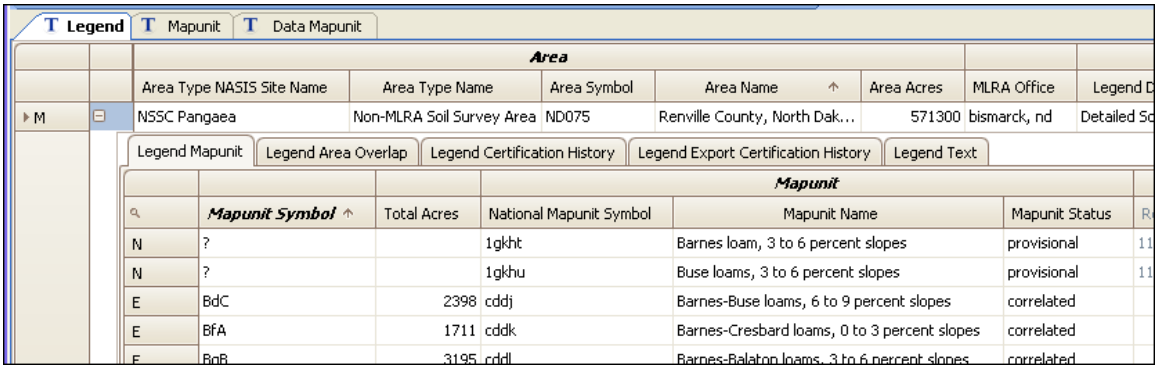
Step 5 – Copy the Provisional Mapunits

Copy the provisional map units and paste into the appropriate Legend Mapunit table. Using the Ctrl button and the left click, Highlight both mapunit records then copy selected trees:


Legend
Mapunit
Data Mapunit
Copy Selected Trees
Mapunit Name
Kind
Status
National Mapunit Sy
N
Barnes loam, 3 to 6 percent slopes
M
consociation
provisional
Correlation
Mapunit History
Mapunit Text
Mapunit USFS Ecological Classification
Mapunit USFS Inte
Data Mapunit
DMU Description
Data Mapuni...
Rep D...
Constitu
N
075BdB
512633
N
075BdB New Buse Component
554662
N
075BdB New Barnes Component
554661
M
Barnes-Buse loams, 3 to 6 percent slopes
C
complex
correlated
cddh
E
075BdB
provisio...
Classification
Mapunit USFS Inte
Correlation
Mapunit History
Mapunit Text
Mapunit USFS Ecological
DMU Descrip
075BdB
075BdB New Barnes Com
075BdB New Buse Compo

Step 6 – Link the New Provisional Mapunits into the Legend

After being copied, the new map units are then pasted into the Legend. The publication Mapunit Symbol and the Total Acres are then added to the table.



Legend | Mapunit | Data Mapunit

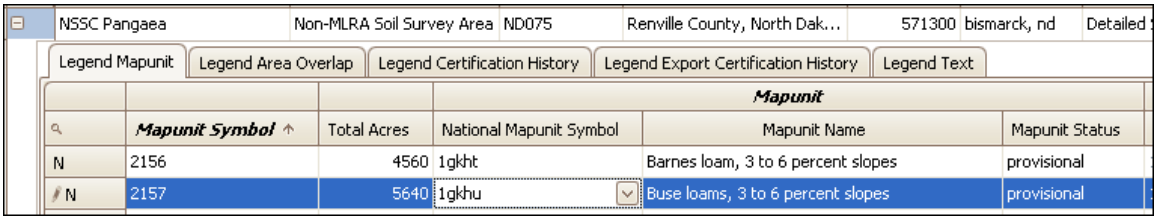
Area

	Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	MLRA Office	Legend D
M	NSSC Pangaea	Non-MLRA Soil Survey Area	ND075	Renville County, North Dak...	571300	bismarck, nd	Detailed Sc

Legend Mapunit | Legend Area Overlap | Legend Certification History | Legend Export Certification History | Legend Text

Mapunit

	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status
N	?		1gkht	Barnes loam, 3 to 6 percent slopes	provisional
N	?		1gkhu	Buse loams, 3 to 6 percent slopes	provisional
E	BdC	2398	cddj	Barnes-Buse loams, 6 to 9 percent slopes	correlated
E	BfA	1711	cddk	Barnes-Cresbard loams, 0 to 3 percent slopes	correlated
E	BgB	3195	cddl	Barnes-Balaton loams, 3 to 6 percent slopes	correlated



NSSC Pangaea | Non-MLRA Soil Survey Area | ND075 | Renville County, North Dak... | 571300 | bismarck, nd | Detailed

Legend Mapunit | Legend Area Overlap | Legend Certification History | Legend Export Certification History | Legend Text

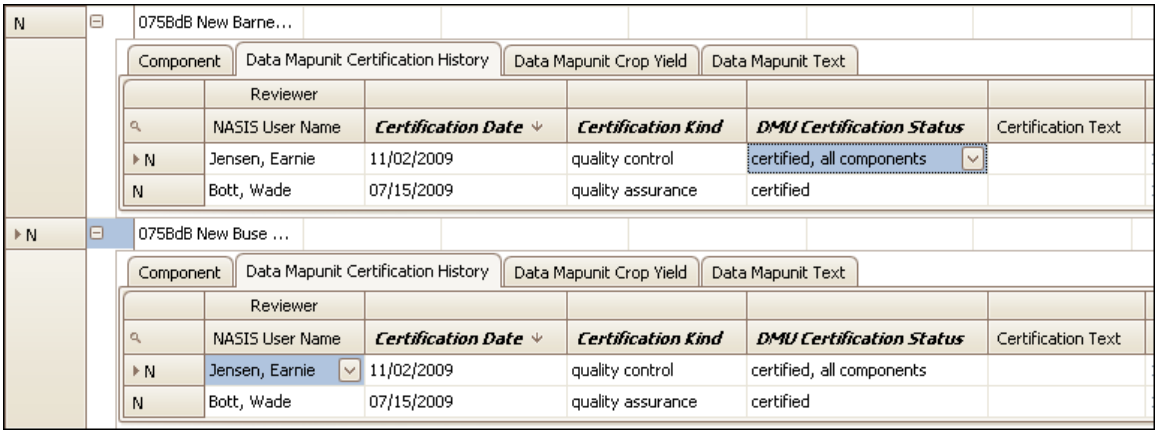
Mapunit

	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status
N	2156	4560	1gkht	Barnes loam, 3 to 6 percent slopes	provisional
N	2157	5640	1gkhu	Buse loams, 3 to 6 percent slopes	provisional

Step 7 – Certification of DMU and Legend

Before the new map unit is changed to a status of "correlated" and before released to the State Soil Scientist for publication, the data must be certified. Return to the Data Mapunit object and open the "Data Mapunit Certification History" child table:

The Soil Survey Leader and the Soil Data Quality Specialist are required to certify the Data Mapunit.



N | 075BdB New Barne...

Component | Data Mapunit Certification History | Data Mapunit Crop Yield | Data Mapunit Text

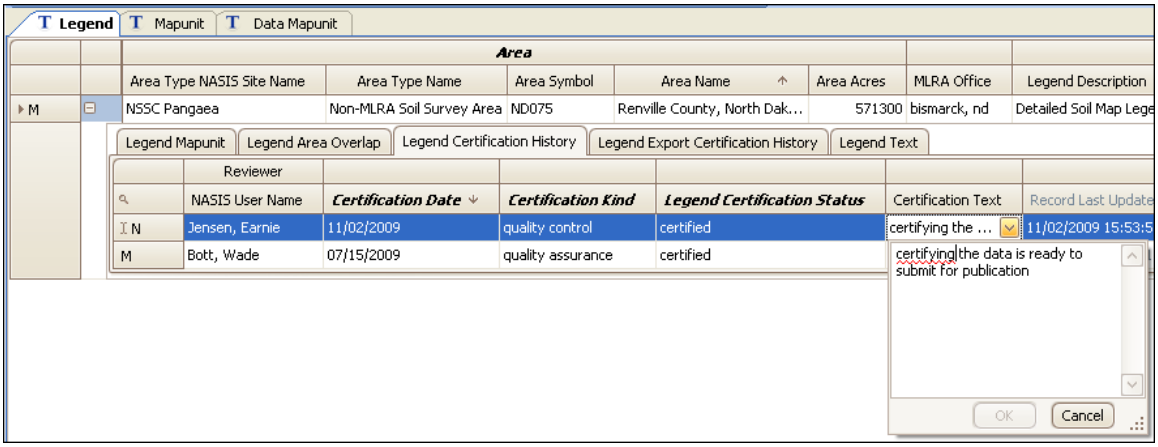
	Reviewer: NASIS User Name	Certification Date	Certification Kind	DMU Certification Status	Certification Text
N	Jensen, Earnie	11/02/2009	quality control	certified, all components	
N	Bott, Wade	07/15/2009	quality assurance	certified	

N | 075BdB New Buse ...

Component | Data Mapunit Certification History | Data Mapunit Crop Yield | Data Mapunit Text

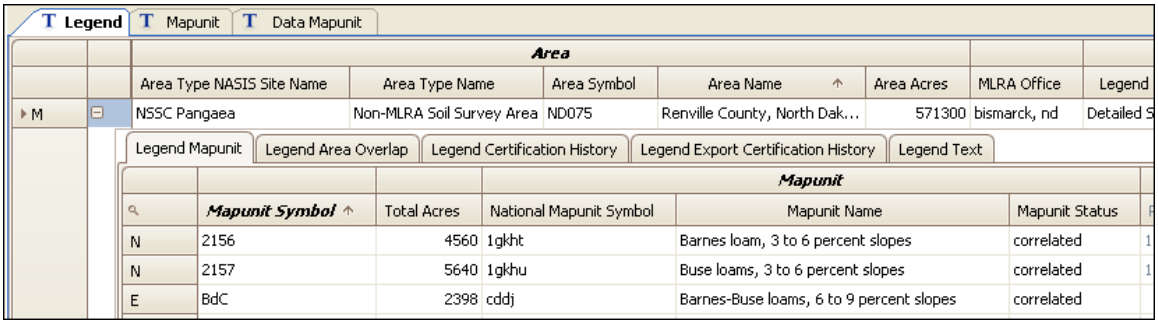
	Reviewer: NASIS User Name	Certification Date	Certification Kind	DMU Certification Status	Certification Text
N	Jensen, Earnie	11/02/2009	quality control	certified, all components	
N	Bott, Wade	07/15/2009	quality assurance	certified	

Then, return to the Legend Object and open the Legend Certification History table and repeat the process:



Step 8 – Modify the Mapunit Status

Return to the Mapunit Object and modify the mapunit status to reflect the correlation – the new map unit is now “Correlated” and the old map units are set to “Additional”:



The “Splitting Existing Mapunits” scenario is completed.